Methods: 41consecutive patients (38 men and 3 women; age 52 ± 9 years) with anterior STEMI were enrolled. All patients were randomized into two groups and underwent primary PCI for anterior STEMI: stenting after manual thrombectomy (aspiration group, n=22) and stenting without manual thrombectomy (conventional group, n=19). The thermodilution-derived coronary flow reserve (CFR) and index of microcirculatory resistance (IMR) were measured by using the pressure-temperature sensor-tipped coronary wire at the left anterior descending artery (LAD) after primary PCI. Baseline echocardiography was performed before discharge and follow-up echocardiography was performed 6 months later.
Results: There was no significant difference in reperfusion time (onset to balloon time) and CFR (2.01 ± 1.1 vs. 2.08 ± 1.1, p = 0.831), baseline ejection fraction (EF, 44.5 ± 7.5% vs. 48.0 ± 8.0%, p = 0.15), baseline wall motion score index (WMSI, 1.52 ± 0.32 vs. 1.46 ± 0.31, p = 0.59) between two groups. But, there was significant difference in IMR (22.3 ± 8.7 vs. 29.5 ± 11.9, p = 0.037), ΔEF (follow up EF – baseline EF, 5.86 ± 7.2 vs. 1.29 ± 2.5, p = 0.011), ΔWMSI (baseline WMSI – follow up WMSI, −0.199 ± 0.242 vs. 0.003 ± 0.075, p = 0.001) between two groups.
Conclusions: Compared with conventional PCI, manual thrombectomy before stenting for patients with anterior STEMI seems to preserve microvascular integrity. Manual thrombectomy as an adjunctive method of primary PCI for acute anterior STEMI might have beneficial efficacy on myocardial microcirculation.

TCT-471

The Impact Of First- versus Second-Generation Drug-Eluting Stents On Immediate- and Intermediate-Term Outcomes In A Complex ST-Segment Elevation Myocardial Infarction Population

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Background: Drug-eluting stents (DES) are used in ST-segment elevation myocardial infarction (STEMI) patients with good safety and efficacy, even in complex patient subsets. This study aimed to compare the in-hospital and 1-year outcomes of STEMI patients with complex clinical and angiographic characteristics treated with 1st- versus 2nd-generation DES.
Methods: The study included 524 consecutive STEMI patients with ≥1 of the following characteristics: Ejection fraction (EF) <30%, chronic renal insufficiency (CRI), cardiogenic shock, bifurcation, unprotected left main, totally occluded, ACC/AHA Type C, bypass graft, in-stent restenosis, presence of thrombus, >1 lesion treated, and stent implantation length ≥28 mm. Clinical outcomes of patients treated with 1st-generation DES (Cypher/Taxus) (n=452) were compared to those treated with 2nd-generation DES (Promux/Xience) (n=102).
Results: Baseline demographics were similar in patients treated with 1st- vs. 2nd-generation DES. Mean age was 62.2 ± 12.5 years; 65% males; mean EF was 42 ± 13 %; and 13.1% had CRI. IABP use (14.2% overall), procedure time (50 ± 51 min overall), lesion locations, graft and in-stent restenosis lesions were also similar. 2nd-generation DES were used more frequently in Type C lesions (56.8 vs. 27.4 %, p=<0.001) and distal lesions (25.2 vs. 13.8 %, p=<0.001). The number of implanted DES was 1.5 ± 0.8 overall. Angiographic success was similar at 99.4% overall. There was no difference in composite major in-hospital complications. 1-year mortality, revascularization, and major adverse cardiac event rates were similar in both groups.(Table)

	1st generation DES (n=452)	2nd generation DES (n=102)	P value
In-hospital Death	4.2 (19)	1 (1)	0.146
In-hospital Q-wave MI	0.4 (2)	0 (0)	1
In-hospital Urgent CABG	0.4 (2)	4 (4)	0.012
In-hospital Stent thrombosis	0.4 (2)	0 (0)	1
Major in-hospital complications (death/QWMI/CABG)	4.9 (22)	4.9 (5)	1
1-year Death	10.3 (46)	6.9 (7)	0.305
1-year Q-wave MI	0.2 (19)	1 (1)	0.339
1-year Target Lesion Revascularization	5.2 (22)	4.1 (4)	0.8
1-year Target Vessel Revascularization	9.2 (39)	8.2 (8)	0.747
1-year Stent thrombosis	0.9 (4)	0 (0)	1
1-year MACE (Death/QWMI/TVR)	17.9 (81)	14.7 (15)	0.438

Conclusions: Despite the presence of higher lesion complexity, the use of 2nd-generation DES in a STEMI population with complex clinical and angiographic characteristics results in similarly low rates of in-hospital and 1-year outcomes when compared to 1st-generation DES.

TCT-472

Prognosis of Patients Presenting with Non ST-Segment Elevation Myocardial Infarction and Non-obstructive Coronary Artery Disease: Propensity Score Matched Cohort from the ACUITY Trial

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Background: Troponin elevation is a risk factor for mortality in pts with non ST-segment elevation acute coronary syndromes (NSTEACS). However, prognostic impact of non-obstructive coronary artery disease (CAD) in NSTEACS pts with troponin elevation is unknown.
Methods: In the ACUITY trial, 3-vessel quantitative coronary angiography was performed in a formal substudy of 6,921 pts with moderate and high-risk NSTEACS. Patients with elevated admission troponin levels (> local upper limit of normal) were stratified by the presence or absence of obstructive CAD (any lesion with diameter stenosis (DS) ≥50%). Propensity-score matching was performed to adjust for baseline characteristics.
Results: Of 2,442 patients with elevated troponins, 197 (8.8%) had non-obstructive CAD. Maximum DS was 83.5% ± 17.5 vs. 24.1% ± 12.2 (p<0.0001) in pts with vs. without obstructive CAD. Propensity score matching yielded 117 patients with non-obstructive CAD and 351 patients with obstructive CAD with no significant baseline differences including renal function and diabetes. Overall 1-year mortality was significantly higher in pts with non-obstructive CAD (5.2% vs 1.2%; HR [95%CI] = 4.57 [1.29,16.21], p=0.01), driven mainly by higher non-cardiac mortality (Table). Conversely, recurrent MI and unplanned revascularization rates were higher in patients with obstructive CAD.

	Non-obstructive CAD (n=117)	Obstructive CAD (n=351)	Relative Risk [95% CI]	P-Value
1 Month Outcomes				
Death	2.6% (3)	0.3% (1)	9.07 [0.94,87.15]	0.02
Cardiac death	0.9% (1)	0.3% (1)	3.02 [0.19,48.24]	0.41
Non-cardiac death	1.7% (2)	0.0% (0)	N/A	0.01
Recurrent MI	0.9% (1)	6.3% (22)	0.13 [0.02,1.00]	0.02
Unplanned revascularization	0.0% (0)	3.7% (13)	N/A	0.04
Major bleeding	5.2% (6)	6.0% (21)	0.86 [0.35,2.12]	0.74
CVA/TIA	0.0% (0)	0.3% (1)	N/A	1.00
1-Year Outcomes				
Death	5.2% (6)	1.2% (4)	4.57 [1.29,16.21]	0.01
Cardiac death	1.7% (2)	0.9% (3)	2.03 [0.34,12.16]	0.43
Non-cardiac death	3.5% (4)	0.3% (1)	12.20 [1.4,109.1]	0.004
Recurrent MI	3.6% (4)	9.0% (31)	0.38 [0.13,1.08]	0.058
Unplanned revascularization	0.0% (0)	9.2% (31)	N/A	0.001
CVA/TIA	0.0% (0)	0.3% (1)	N/A	1.00

Conclusions: Patients presenting with NSTEACS symptoms and elevated troponin levels in whom obstructive CAD is absent, are at significantly higher risk of 1-year all-cause and non-cardiac mortality than those with obstructive CAD, despite lower rates of unplanned revascularization and subsequent MI. Troponin elevation in pts with non-obstructive CAD may be an important risk factor for mortality, prompting a comprehensive search for an alternative diagnosis.

TCT-473

Admission At Nights Or Weekends Has No Adverse Effect On Mortality For ST Elevation Myocardial Infarction Patients Treated By Primary Percutaneous Coronary Intervention: Single Center Study From A Large Tertiary Cardiac Unit In United Kingdom

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Background: Mortality amongst emergency medical admissions has been reported to be higher when patients are admitted to hospital at nights and weekends. We studied the

mortality for STEMI patients presenting at different times to a large cardiothoracic center in the UK with a 24/7 primary PCI (PPCI) service delivered by senior medical staff.
Methods: We included all patients who underwent PPCI from September 2009 to November 2011. We divided them into three groups according to the time of admission to our unit as group 1: in-hours (8 am to 6 pm weekdays), group 2: out-of-hours (6 pm to 8 am week nights) and group 3: weekend (Saturday 8 am to Monday 8 am) and bank holidays.
Results: Of the 1471 patients admitted and underwent PPCI in our unit during the study period, 605 (41.1%), 397 (27%) and 469 (31.9%) were included in group 1, 2 and 3 respectively. Pre-procedure cardiogenic shock was significantly higher in group 1 compared to group 2 (8.9% vs 5.5%, p= 0.05), but no other significant difference was noted in the baseline and procedural characteristics between the groups (Table 1). When compared to group 1, door to balloon (DTB) time (median, IQR: 29, 24-39 mins) was significantly prolonged in group 2 (33, 24-36 mins, p=0.004) and group 3 (36, 28-47 mins, p<0.0001). There was no difference in DTB time between groups 2 and 3 (p=0.15). However, there was no significant difference in in-hospital mortality (grp 1 vs grp 2 vs grp3: 4.6% vs 4.3% vs 5.3%, p NS), 30-day mortality (6.4% vs 6.3% vs 7%, p NS) or stent thrombosis (0.8% vs 0.8% vs 0.2%, p NS) between the groups.

Variable	In hours (8 am to 6 pm weekdays)	Out of hrs (6pm to 8 am weekdays)	Weekend+bank Holidays
N (%)	N= 605	N= 397	N= 469
Age (mean±SD)	65±14	66±13	65±13
Age >75 yrs	164 (27.1)	97 (24.4)	115 (24.5)
Female	168 (27.8)	114 (28.7)	118 (25.2)
Diabetes	70 (11.6)	49 (12.3)	55 (11.7)
Cardiogenic shock	54 (8.9)	22 (5.5)	36 (7.7)
Previous MI	70 (11.6)	56 (14.1)	51 (10.9)
Previous CABG	16 (2.6)	15 (3.8)	5 (1.1)
Previous PCI	37 (6.1)	28 (7.1)	31 (6.6)
Single vessel PCI	545 (90.1)	356 (89.7)	412 (87.8)
Drug eluting stent (at least one)	361 (59.7)	236 (59.4)	278 (59.3)

Conclusions: In this consecutive series of patients admitted to a high volume primary PCI center, there was no difference in mortality when patients were admitted at night, at the weekend or during regular office hours. The involvement of senior medical staff early in the patients' admission may have contributed to these consistent outcomes.

TCT-474

Paclitaxel-eluting Balloon In Primary Percutaneous Coronary Intervention In Amsterdam (PAPPA): Sustained Safety And Efficacy At 12 Months Follow-up.

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Background: Bare metal (BMS) and drug eluting stents have shown to reduce repeat target lesion revascularization in primary percutaneous coronary intervention (PPCI), however this did not result in a reduction of recurrent myocardial infarction or mortality rates. Furthermore, there are concerns of the occurrence of stent thrombosis. As a novel treatment modality, a drug-eluting balloon (DEB) may be a therapeutic challenge, as it can provide the potential advantage of delivering an anti-proliferative drug without leaving a coronary stent, hereby not disrupting the physiologic properties of the vessel. Our aim was to evaluate safety and feasibility of using a CE-marked paclitaxel-eluting balloon in PPCI.
Methods: 100 patients with ST-elevation myocardial infarction (STEMI), eligible for PPCI, were treated with a DEB only strategy. Bail-out stenting with BMS was allowed only in case of type C-F coronary dissection or a residual stenosis > 50%. All patients were treated with i.v. bivalirudin, on top of aspirin, heparin and prasugrel. The primary endpoint of the study was the occurrence of major cardiac adverse events (MACE) at one month, defined as the composite of cardiac death, recurrent myocardial infarction and target lesion revascularization. The secondary endpoints contained 6-12 months follow-up and major bleeding rates.
Results: Of 100 STEMI patients, 59 patients were treated with a DEB only, bail-out stenting was performed in 41 patients. One-month follow-up was completed in all patients. A total of 3 MACE was reported within one-month follow-up, all in the DEB only group. No major bleedings were reported. At 12 months, with complete follow-up in 98%, 2 additional MACE were reported. One patient underwent target vessel revascularization after initial DEB plus bail-out stenting. Another patient, treated with a DEB only, died due to cardiac death.
Conclusions: This first study to evaluate clinical outcome of the application of a DEB only strategy in the setting of PPCI for STEMI, showed good short-term results, with sustained safety and efficacy at 12 months follow-up. A randomized controlled trial is warranted to evaluate the efficacy of this strategy compared to the current standard of care.

TCT-475

Association of the P53 codon 72 polymorphism with infarct size and left ventricular ejection fraction in patients with ST-segment elevation acute coronary syndrome

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Background: Apoptosis (AP) has been involved in the physiopathology of acute myocardial infarction (AMI). The P53 gene plays an essential role in the activation of AP. Recent studies have shown that the Arg72 variant induces apoptosis markedly better than does the Pro72 variant. The objective is to analysis the relationship between P53 codon 72 polymorphism (PLs) with the infarct size and the LVEF in patients with ST-segment elevation acute coronary syndrome (STE-ACS) undergoing primary angioplasty.
Methods: DNA of 91 patients with STE-ACS. The PLs were identified by polymerase chain reaction and restriction enzyme analysis. Patients were divided into three groups (homozygous arginine –AA–, heterozygous arginine/proline –AP– and homozygous proline –PP–). The infarct size was estimated of infarct with the peak serum concentrations of CK and CK-MB. LVEF was determined by 2D echocardiography.
Results: 63 men (69%) and 28 women (31%), with an average age of 72 ± 13 years. The prevalence of AA, AP and PP PLs was of 51, 41 and 8%, respectively. No significant differences were found regarding the demographical, clinical and pharmacology treatment characteristics in the three groups. The artery responsible for the AMI was the right coronary (46%), left anterior descending (38%), left circumflex (14%) and left main coronary artery (2%). A bare metal stent was implanted in a 40% and drug eluting stent in 58% and the final TIMI-flow achieved was >2 in 89% of the patients. Peak levels of CK (AA 1644 ± 1586 vs AP 1273 ± 1197 vs PP 323 ±177 U/L; p 0.02) and CK-MB (AA 128 ± 114 vs AP 97 ± 93 vs PP 22 ± 13 U/L; p 0.04) were significantly higher in homozygous AA patients. The LVEF (AA 49±8, AP 54±7, PP 59±6 %, p 0.001) were significantly lower in homozygous AA patients. We carried out a multivariate logistic regression analysis and the AA PL remained as an independent predictor for size of infarct (p 0.025) and the LVEF (p 0.001).
Conclusions: Patients with STE-ACS homozygous AA for the codon 72 of gene P53 has a larger infarct size and lower LVEF compared to the non-homozygous AA.

TCT-476

Relationship Between Reference Vessel Diameter and the Incidence and Impact of Incomplete Coronary Revascularization Following PCI in ACS: The ACUITY Trial

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Background: We have previously shown that a diameter stenosis (DS) of ≥50% is optimal to define incomplete coronary revascularization (ICR) in pts with ACS undergoing PCI. However, the optimal reference vessel diameter (RVD) is unknown. We therefore explored the prevalence and impact of ICR in ACUITY according to different RVDs.
Methods: Quantitative coronary angiography (QCA) of the entire coronary tree was performed in 2954 PCI pts with UA/NSTEMI in ACUITY. ICR was defined present if any lesion with a final DS ≥50% by QCA was left untreated in any coronary segment, with the minimal RVD ranging from ≥1.5 mm to ≥3.0 mm in 0.25 mm increments. The primary outcome measure was 1-year rate of major adverse cardiac events (MACE: death, MI or unplanned revascularization).
Results: Using RVD cutoffs of ≥1.5 mm, ≥1.75 mm, ≥2.0 mm, ≥2.25 mm, ≥2.5 mm, ≥2.75 mm and ≥3.0 mm the prevalence of ICR after PCI was 51%, 45%, 37%, 29%, 21%, 14% and 10% respectively. 1-year MACE was increased among pts with ICR using all the RVD cutoffs (Table). Sensitivity and specificity curves for RVD in 0.05mm increments were constructed to define ICR for the occurrence of 1-year MACE. The overlap point of the curves was at QCA RVD ≥1.75 mm (visually estimated RVD ≥2.0 mm). Using a QCA RVD ≥1.75 mm to define ICR, ICR was associated with higher 1-year rates of MACE (22.8% vs. 16.2%, HR[95%CI] = 1.47 [1.24,1.74], P<0.0001), MI (11.9% vs. 7.7%, HR[95%CI] = 1.58 [1.25,2.00], p=0.0001) and unplanned revascularization (15.2% vs. 9.8%, HR[95%CI] = 1.60 [1.29,1.98], p<0.0001), with a trend toward increased mortality (3.0% vs. 2.2%, HR[95%CI] = 1.39 [0.88,2.21], p=0.16).
Conclusions: Depending on the RVD, ICR was present in 10%-51% of pts with ACS after PCI. Regardless of the definition, ICR was associated with 1-year MACE, with a QCA RVD of ≥1.75 mm (visually estimated RVD ≥2.0 mm) representing the optimal cutoff to balance sensitivity and specificity.

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